Comments of the Clean Power Campaign (CPC)
on the
Draft "Energy Action Plan II"

June 22, 2005

Submitted by:
Sheryl Carter (Vice Chair) and Audrey Chang

The Clean Power Campaign (CPC) appreciates the opportunity to offer these comments on the June 8, 2005 Draft of the "Energy Action Plan II: Implementation Road Map for Energy Policies" (EAP II). CPC is strongly supportive of the original Energy Action Plan I developed in 2003, and we commend the Joint Agencies for continuing the process and developing an excellent first draft of the EAP II.

We first present our overarching comments about the EAP II draft document and address the Introduction and Summary section of the document, and then we provide our specific comments on each of the Specific Action Areas in Section II.

I. INTRODUCTION AND SUMMARY

CPC strongly commends the Joint Agencies for their cooperation and collaboration in developing the EAP II.
CPC commends the Joint Agencies for their combined commitment and dedication to developing the EAP II and on the progress made to date in implementing the EAP I. The Joint Agency Energy Action Plan Meeting held on June 15, 2005, with the impressive array of Commissioners from both the California Public Utilities Commission (CPUC) and California Energy Commission (CEC), as well as Secretaries from the Governor's Cabinet, underscored the commitment from all the California state agencies with energy-related responsibilities. Continued interagency collaboration will be essential to California meeting its various energy-related state policies, especially the greenhouse gas reduction goals recently established by the Governor in Executive Order S-3-05.

CPC strongly supports EAP II's overarching goal "for California's energy to be adequate, affordable, technologically advanced, and environmentally sound" (p. 2).
CPC believes that supplying energy for California's growing economy is achievable without sacrificing the environmental heritage of the state.

CPC strongly supports the explicit intent that the EAP II serve as a roadmap for the entire state.
CPC commends the Joint Agencies for the inclusion and integration of consumer-owned utilities in the EAP II. We strongly support the statement, "The Energy Action Plan is intended as an implementation roadmap for the entire State, not only the 75-80 percent of California that is served by investor-owned utilities." (p. 3) Since the EAP II roadmap is intended to apply at the state level, the publicly owned utilities must also be included in

the vision laid out in the EAP. In particular, the consumer-owned utilities must be involved in the top priority resources of the "loading order" as well as the Governor's global warming goals. To this end, we recommend that goals specific to consumer-owned utilities be established as separate action items in each of the Specific Action Areas.

The inclusion of transportation is an important expansion of EAP II.
CPC is strongly supportive of the EAP II's inclusion of the transportation sector, "reflecting the importance of these energy resources in California's energy picture and the potential impacts of their use on the environment" (p. 3). Transportation fuels have a significant impact on the state's economy and environmental health. Adequate clean fuel supplies are necessary to minimize price volatility and reduce dependency on petroleum. Petroleum fuel production and use results in the emissions of criteria air pollutants, air toxics, greenhouse gases and water pollutants. Since California's demand for petroleum is growing faster than its already tight supply, the state is becoming more reliant on imports. The state must improve petroleum use efficiency, drastically increase the use of cleaner alternative fuels and reduce the per capita vehicle miles traveled. We offer recommendations below to support implementation of effective and forward-looking strategies to address transportation fuel use in California.

We commend the Joint Agencies for continuing their strong support of the "loading order" put forth in the EAP I and endorsed by the Governor.
CPC strongly supports energy efficiency, followed by renewables, as first in the "loading order" (p. 3), and to the extent that energy efficiency and renewables are unable to satisfy increasing energy and capacity needs, then (clean and efficient) fossil generation is to be considered. We rely on CEERT's comments for the bulk of our renewables recommendations.

EAP I Accomplishments should encompass all related historical achievements.
In the summary section outlining successes in implementing EAP I (p. 3), electric efficiency accomplishments are noted, but similar accomplishments for natural gas efficiency are not included. As energy efficiency includes both electric and natural gas efficiency, we suggest that similar gains in natural gas efficiency and the establishment of targets for natural gas savings, which help to reduce customer bills, are not overlooked and are included in the list of EAP I accomplishments.

We agree with Commissioner Kennedy that the EAP II should be broadened beyond simply outlining the differences between EAP I and EAP II. The Energy Action Plan thus far has served as an overarching policy vision for the energy agencies, as well as an implementation roadmap, and the overall big-picture vision should not be lost in EAP II. We recommend that historical achievements in each of the action areas be used to contextualize the new goals that are set in this new document. To that end, we have attached a summary of some of those accomplishments.

II. SPECIFIC ACTION AREAS

In this section, we present our recommendations, highlighted in bold text. For our recommended revisions to Key Actions for each Action Area, we have indicated deletions with strikethrough text, and additions with underlined text.

1. Energy Efficiency

We strongly support the inclusion of this action area on energy efficiency as "the resource of first choice for meeting California's energy needs" (p. 4). In particular, we support Key Action 6 (to develop verifiable performance incentives in time for 2006) and Key Action 8 (consideration of the water-energy connection).

The section on energy efficiency should also include historical energy efficiency achievements. We agree with the comments made by Commissioner Kennedy at the June 15 Joint Agency meeting that the incredible accomplishments in both natural gas and electric efficiency – such as gains achieved thus far, energy savings goals for each, and decoupling the IOUs' financial health from the amount of energy sold – should be addressed. Our comments regarding this section's action items follow:

- We recommend that Key Action 1 be revised as follows:
  1. Significantly expand efforts to improve public awareness and adoption of energy efficiency, <u>while maintaining the primary focus of achieving all cost-effective energy efficiency savings</u>. Special attention should be given to low income, non-English speaking, and other hard-to-reach communities.
  We recommend that the EAP II provides a consistent statewide message consistent with other state policy. Public awareness, education and outreach will be essential in helping California meet its energy savings goals. While we support programs that target hard-to-reach customers as part of a comprehensive energy efficiency portfolio, a primary focus on these customers as called out in Action 1 is in conflict with the CPUC's primary focus on pursuing "all cost-effective energy efficiency opportunities"[1] as a resource.
- We recommend the addition of a new action similar to Action 7 in the renewables section:
  10. Work with consumer-owned utilities in the development of energy efficiency programs to pursue all cost-effective energy efficiency savings as a resource for the state.
- We recommend revising Key Action 4 to read:
  4. Adopt new building standards that *consider* the inclusion of demand response technologies, integrated photovoltaic systems and other clean on-site generation, for implementation in 2008 in a manner that will enhance and not reduce the savings that would otherwise be achieved without these additional measures. (emphasis added)

2. Demand Response

In the demand response Key Action 2, we suggest adding at the end, "Demand response programs and policies should have a net environmental benefit, and at a minimum not have a negative impact, by ensuring that any pricing structures do not encourage

[1] CPUC D.04-09-060, Finding of Fact 1, p. 44.

increases in overall consumption." CPC believes that providing customers with price signals that more accurately reflect the cost of providing electricity can be an important step to help customers make rational decisions about their electricity use. However, we are concerned that even though dynamic pricing can reduce peak demand, customers may simply shift load[2] and overall electricity consumption may even increase.

In addition, we recommend that demand response programs should restrict the use of back-up generators unless they are ultra-clean as defined by state Legislation.

3. Renewables

We support Key Action 7's focus on the consumer-owned utilities' development of their RPS plans, and support the comments filed by CEERT.

4. Electricity Market Structure

In this section, although high "rates" are first stated as the problem (p. 7), the focus of the section is in fact on bills. (The paragraph on page 7 reads, "Californians pay some of the highest utility rates in the nation and the State must take action to decrease overall retail energy bills and to improve rate structures so that rates are transparent and consumers have the tools to manage their energy usage. The agencies commit to reducing total retail energy bills by all means possible, including supporting programs for energy efficiency, demand response, and self-generation, assuring that the utilities' supply portfolios are least cost, and increasing education and outreach.") **We support this appropriate focus on bills instead of rates.**

For Key Action 4, we recommend the following modification:

> **4. Develop rules that would allow for an effective core/noncore retail market structure <u>that are consistent with all of the goals in the EAP II</u> including <u>the pursuit of all cost-effective energy efficiency,</u> ~~mechanisms to guard~~ <u>guarding</u> against cost-shifting, ~~preserve~~ <u>preserving</u> reliability, and ~~achieve~~ <u>achieving</u> RPS goals.**

5. Electricity Infrastructure

Key Action 8 calls for the application of "the <u>environmental adder</u> as a resource selection criterion in IOU procurement decisions" (p. 8, emphasis added). We recommend the following as a more accurate representation:

> **8. Apply the ~~environmental~~ <u>greenhouse gas (GHG)</u> adder ~~as a resource selection criterion in IOU procurement decisions~~<u>, which accounts for the financial risk of future carbon dioxide regulation, in both procurement and future long-term plans on a statewide basis.</u>**

Because the EAP is intended as a roadmap for the entire state, all customers in the state should be protected from the financial risk of GHG emissions.

We recommend that an additional Key Action be added to the list:

[2] Indeed, the final impact evaluation of the Statewide Pricing Pilot, on which PG&E bases its estimates of the demand response possible with an AMI system, reported that "the reduction in energy use during high-price periods was almost exactly offset by increases in energy use during of[f]-peak periods" (p. 7).

9. Support accurate long-term planning on a statewide basis, complete with specific fuel type information.

As part of its ongoing long-term planning process, the CEC is in the ideal position to collect relevant information from all load-serving entities in the state with regards to the fuel type for their planned future resources and roll up the information into a statewide resource plan. Currently, resource plan information is simply identified as "fossil fuel," but it is essential to account for the potential contribution of growing imports of out-of-state coal-fired energy, especially in light of the Governor's greenhouse gas reduction targets. With today's technologies, coal-fired plants emit GHGs at approximately twice the rate of combined cycle natural gas turbine facilities[3]. Just three new 500 MW conventional coal-fired power plants' annual carbon dioxide emissions would more than offset the total lifetime CO_2 savings from the three major regulated utilities' annual investments in energy efficiency programs.

6. Natural Gas Supply and Demand

We support this section's primary focus in the discussion paragraph on reducing or moderating demand. However, we suggest that this focus on natural gas efficiency should be reflected in the section's Key Actions. Specifically, we recommend that the Key Actions be expanded to include other natural gas efficiency measures beyond simply encouraging solar hot water, which alone is not sufficient to reduce demand for natural gas. We recommend that a new Key Action be added to read:

8. Encourage natural gas efficiency measures to reduce the reliance on natural gas for various end uses.

7. Transportation

In support of establishing effective and aggressive policies to address transportation fuel use in California, we offer the following suggested revisions to the list of Key Actions.

- Key Action 4 – To the end of the paragraph add:
  Maximize the use of alternative fuels in fleet vehicle designed to operate on them.
  Due to requirements under the federal Energy Policy Act, state fleets must purchase vehicles capable of operating on alternative fuels. Currently, California fleets have thousands of these vehicles, but many do not burn alternative fuel.[4]
- Key Action 5 – To the end of the sentence add:
  that includes, but is not limited to, driving and maintenance practices, vehicle retrofit technologies and new vehicle technologies.

[3] Spath, Pamela L. and Margaret K. Mann, *Life Cycle Assessment of a Natural Gas Combined-Cycle Power Generation System*, National Renewable Energy Laboratory, September 2000, p. 27. Available on-line at http://www.nrel.gov/docs/fy00osti/27715.pdf

[4] For example, most of the state's flexible-fuel vehicles capable of running on gasoline or a blend of 85% ethanol and 15% gasoline fill up exclusively with gasoline. These vehicles should maximize the use of E-85.

In addition to currently promoted driving practices and new vehicle technologies, there are cost-effective technologies, such as fuel-efficient replacement tires and low-viscosity motor oils, which can deliver immediate oil savings.

- Key Action 8 – After the first sentence add:
  Develop goals and timeframes for petroleum reduction from transit-oriented development.
  The Joint Agencies should set specific targets for reducing petroleum consumption by encouraging new housing and commercial development that provides easy access to public transit.
- Key Action 9 – After the first sentence add:
  Evaluate alternative fuels, including electricity, ethanol, biodiesel, hydrogen, methanol, and natural gas, on a lifecycle basis for their ability to reduce harmful emissions and petroleum consumption and develop a plan that promotes the best performers while maximizing economic benefits to the state.
  Alternative transportation fuels can play a significant role in reducing our dependence on oil and reducing our GHG emissions. The state should establish a strategy to diversify the transportation fuel supply and encourage alternative fuels to compete at the pump.
- Key Action 11 – After the first sentence add:
  Maximize the public health benefits of hydrogen production and use through hydrogen generation from renewable energy sources.
  The hydrogen highway network should follow the GHG and renewable production recommendations of the California Hydrogen Blueprint Plan to achieve a 30 percent reduction in GHG emissions and to utilize 20 percent renewable resources in the production of hydrogen for use in vehicles by 2010.[5]

We also offer the following recommendations for additional actions not considered in the Key Actions:

- **Ensure that transportation planning includes the financial risk of greenhouse gas emissions**. Similar to the CPUC's "GHG adder," transportation standards extend financial commitment to the statewide public, though there is currently no regulatory mechanism that incorporates this factor. For example, AB 1493, which limits greenhouse gas emissions from light duty vehicles, did not instruct the Air Resources Board to consider greenhouse gas financial risk.
- **Support effective regional and inter-regional public transportation.** EAP II should consider public transportation in statewide planning, including advanced light rail service between major population centers. Priority in transportation planning should be given to rail and other public systems that reduce reliance on petroleum fuels.

8. Research, Development, and Demonstration

We recommend that "clean coal" (p. 11) in Key Action 7 be specifically defined as follows. To protect California's consumers and environment, any long-term financial

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[5] CalEPA, *California Hydrogen Blueprint Plan, Volume 1*, May 2005.

commitments by California utilities to coal-based generation should be conditioned on environmental performance (NOx, SO2, mercury and CO2 emissions) comparable to that of state-of-the art technology (e.g., IGCC or combined-cycle gas generation), coupled with the capacity to dispose inexpensively and responsibly of the facility's carbon dioxide emissions. Long-term investments in facilities lacking such capacity pose unacceptable financial risks, in light of the magnitude of carbon dioxide emissions associated with coal-based generation and the increasing likelihood of regulatory limits on such emissions.

9. Climate Change

CPC strongly supports the addition of this section on climate change as an integral part of the EAP, as well as the Governor's establishment of greenhouse gas reduction goals for California in Executive Order S-3-05. We especially support Key Actions 1-5, but also offer the following suggestions:

- CPC supports Key Action 3, but in addition **we recommend an additional Key Action be added to also coordinate on a statewide cap-and-trade program not limited to the IOUs.** A statewide cap-and-trade program for all emissions from California's electric and natural gas sectors would be more effective than a cap established only for the IOUs because it would encompass *all* retail sellers of electricity and natural gas and thereby encompass *all* of the emissions from these sectors in the state.
- **We recommend that Key Action 5 be made more explicit to recognize that any long-term financial commitments by California utilities to coal-based generation should be conditioned on environmental performance (NOx, SO2, mercury and CO2) comparable to that of state-of-the art technology (e.g., IGCC or combined-cycle gas generation), coupled with the capacity to dispose inexpensively and responsibly of the facility's carbon dioxide emissions.** The CO2 emissions associated with electricity generated from conventional coal without carbon sequestration will make it impossible to meet the Governor's greenhouse gas reduction goals.

CONCLUSION

CPC applauds the Joint Agencies for developing an excellent first draft of EAP II. We look forward to continuing to work with the Joint Agencies and the other stakeholders to develop the California's road map to a clean energy future.

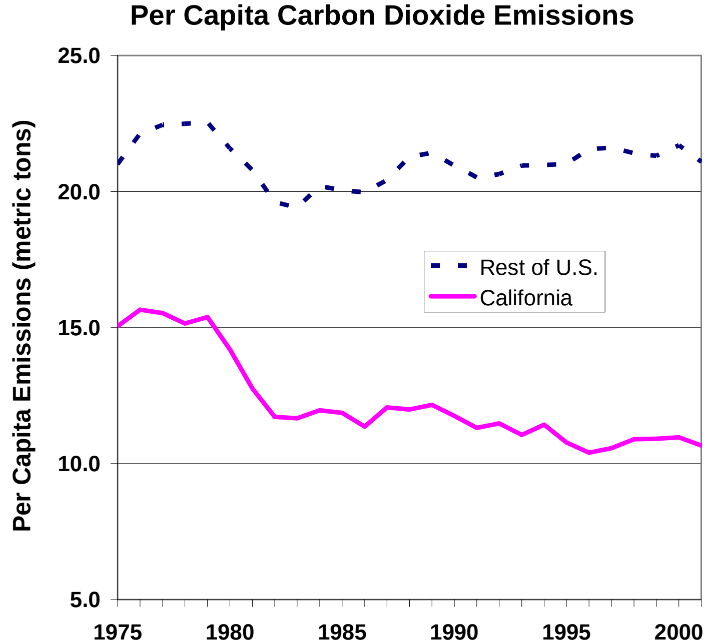
CALIFORNIA'S SUSTAINABLE ENERGY POLICIES PROVIDE A MODEL FOR THE NATION

By Audrey Chang

May 2005

California has long been at the vanguard of innovative energy policy. Today, the Golden State continues to establish pioneering energy policies that address pressing environmental concerns while strengthening the sixth largest economy in the world.[1]

California has reduced its contributions to global warming and boosted its economy by focusing policies on its energy production and transportation sectors, which together account for 92% of the state's carbon dioxide (CO_2) emissions.[2] CO_2 emissions per capita in California have decreased by 30% since 1975 (when California's efficiency efforts first began in earnest), while U.S. per capita CO_2 emissions have remained essentially level.[3]



Source: Oak Ridge National Laboratory, 2004.[4]

California State Policy Establishes Sustainable Energy as a Priority

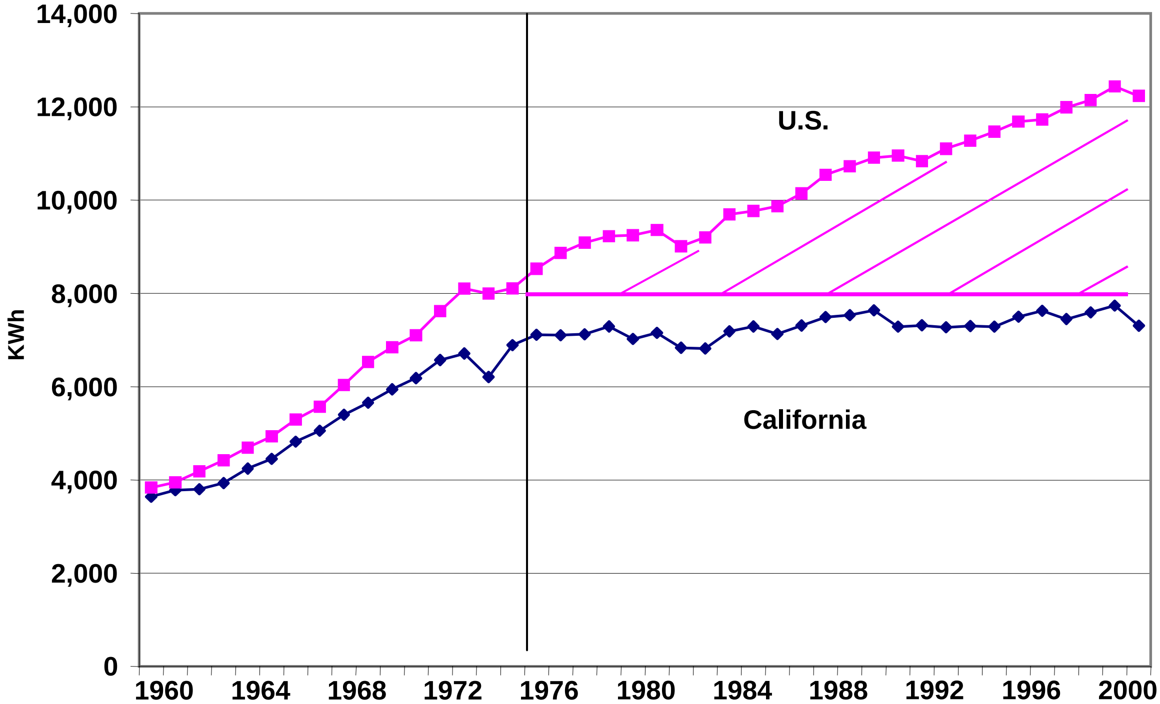
- Together with the governors of Washington and Oregon, Governor Schwarzenegger has launched the West Coast Governors' Global Warming Initiative, one of the leading state-level efforts on global warming. In November 2004, the Governors committed to act individually and regionally "to reduce their greenhouse gas emissions below current levels through strategies that promote long-term economic growth, protect public health and the environment, consider social equity, and expand public awareness."[5]
- The Energy Action Plan, adopted by the state's energy agencies and endorsed by Governor Schwarzenegger, establishes a "loading order" of preferred energy resources, placing energy efficiency as the state's top priority procurement resource, followed by renewable energy generation.[6]
- In December 2004, Governor Schwarzenegger issued a green buildings Executive Order, requiring that all new and renovated state buildings achieve environmental ratings of LEED (Leadership in Energy and Environmental Design Green Building Rating System®) Silver or higher, setting a goal for all state buildings to be 20% more efficient by 2015, and encouraging the private sector to do the same.[7]

Energy Efficiency is a Proven and Cost-Effective Resource for California's Utilities

- California's investments in energy efficiency programs and improvements in building and appliance efficiency standards over the past 30 years have:

- Enabled California to hold per capita electricity use essentially constant, while the rest of the nation saw per capita electricity use increase by nearly 50%.[8]

Comparison of Per Capita Electricity Consumption in U.S. and California

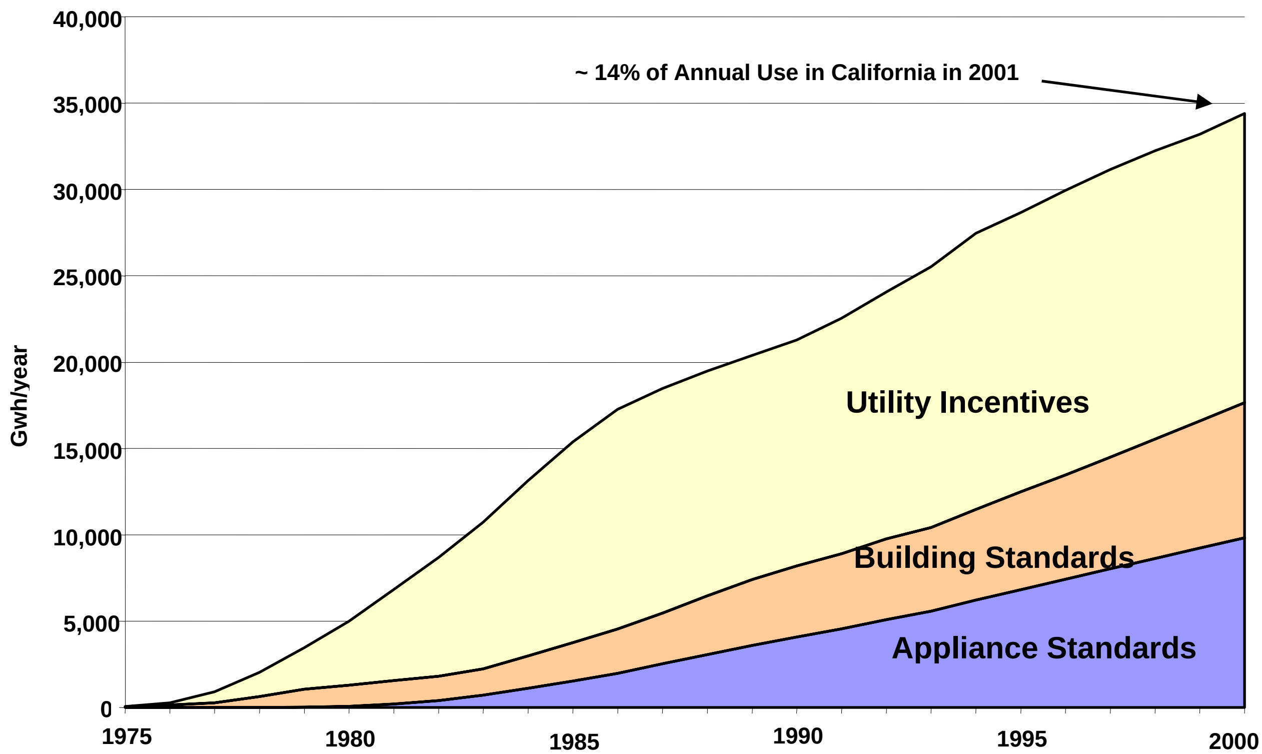


Source: California Energy Commission, 2004.[9]

- Saved more than 10,000 MW of peak demand (equivalent to avoiding twenty giant power plants), and about 35,000 GWh each year (equivalent to 14% of California's energy consumption).[10]
- Increased California's inflation-adjusted economic output per unit of electricity consumed by over 40% (while the rest of the nation increased by only 8%), demonstrating that economic growth need not be accompanied by proportional increases in power consumption.[11]

- The cost of efficiency programs over their lifetime has averaged 2-3¢ per kWh, less than half the cost of the avoided generation.[12] Over the last decade alone, these efficiency programs have provided net benefits of about $3.4 billion to California's economy.[13]
- Energy efficiency and conservation played a crucial role in calming the energy crisis in 2001. Californians avoided blackouts by cutting demand in summer 2001 by more than 5,500 MW, a decrease in peak demand of more than 10% when adjusted for economic growth and weather conditions.
- California law now requires the state's investor-owned utilities to use modest regular adjustments in electric and gas rates to break the link between the utilities' financial health and the amount of electricity and natural gas sold.[14] This removes significant regulatory barriers to utility investments in cost-effective energy efficiency improvements, and helps align the interests of utilities and customers.

Annual Energy Savings from Efficiency Programs and Standards



Source: California Energy Commission, 2003.[15]

California Continues to Lead the Nation in Energy Efficiency

- California's most recently adopted energy efficiency standards for buildings and appliances are expected to save 2,800 MW and avoid the need for 5 giant power plants in the next 10 years.[16] These standards are regularly revised, ensuring that California's buildings and appliances will remain the most energy efficient in the nation.[17]
- In September 2004, California regulators set the nation's most aggressive energy savings goals, which will more than double the current level of savings over the next decade.[18] The utilities are expected to invest nearly $6 billion over that period to reach these aggressive targets, which will:
  - Avoid the need to build 10 giant power plants (by saving nearly 5,000 MW). (While other states' energy efficiency efforts deliver annual savings ranging from about 0.1% to 0.8% of their annual electricity use,[19] the new targets will establish California as the undisputed energy efficiency leader, with annual electricity savings that will exceed 1% of total annual load by 2008.[20])
  - Provide customers relief from rising natural gas bills by tripling annual gas savings by the end of the decade (saving 444 million therms per year by 2013, equivalent to the consumption of one million households).
  - Reduce CO_2 emissions by an estimated 9 million tons per year by 2013, equivalent to taking nearly two million cars and trucks off the road.
  - Provide about $10 billion in *net* benefits to the state's consumers over the next decade.
- In January 2005, regulators adopted a new energy efficiency administrative structure, which fully integrates energy efficiency into resource procurement for the state's regulated utilities.[21] Utilities are now required to invest in energy efficiency whenever it

is cheaper than building new power plants. The savings achieved through these energy efficiency programs will be subject to rigorous independent verification.

- Utilities provide energy efficiency services and rate assistance to low-income customers. Since May 2001, regulators have set a goal of reaching 100% of low-income customers who want to participate. To this end, the utilities are expected to provide energy efficiency services to 156,000 low-income households in 2005.[22]

California's Commitment to Renewable Energy

- California already has more renewable electricity generation capacity than any other state,[23] and this amount will double in the next ten years.[24] Currently, renewable resources (such as wind, solar, geothermal, biomass, and small hydroelectric plants) provide 12% of California's electricity production, compared to 2% on a national level.[25]
- California's Renewable Portfolio Standard, enacted in 2002, requires the state's largest utilities to buy or produce 20% of their power from renewable energy sources by 2017.[26] The Governor has accelerated this goal to 20% by 2010, which will result in the addition of up to 600 MW of new renewable energy generation capacity each year until then.[27]
- Governor Schwarzenegger and the California Energy Commission have recommended extending this renewable energy target to 33% by 2020.[28]

California Protects Utility Customers from the Future Costs of Global Warming

- In December 2004, the California Public Utilities Commission (CPUC) ruled that heat-trapping power plant emissions will likely be regulated in the future, and the CPUC approved a new policy to protect consumers from the risk of higher energy bills associated with global warming.[29]
- Utilities are now required to assign a dollar cost to greenhouse gas emissions (GHG), reflecting their associated financial risk, in long-term planning and procurement in order to select the overall least cost resources. The CPUC decided in April 2005 that the leading global warming pollutant, carbon dioxide, should be assigned a levelized cost of $8 per ton for these purposes.[30]
- Long-term investments in conventional coal-burning power plants, which emit twice as much CO_2 as natural-gas fired plants, present the most serious financial risk in the face of potential carbon regulation; on the other hand, renewable resources and energy efficiency emit little or no CO_2. The CPUC's new policy creates an additional incentive for utilities to invest in cleaner energy resources.

California Minimizes Global Warming Pollution from the Transportation Sector

- California is the first state in the nation to regulate motor vehicle greenhouse gas emissions. With a new standard taking effect in January 2006, new passenger cars and light trucks beginning with model year 2009 will be required to have lower tailpipe emissions of CO_2 and other pollutants.[31] The standard is expected to reduce GHG emissions from new passenger vehicles by approximately 30% by 2016.[32]
- Under a 2003 law, the state will implement a replacement tire efficiency program to ensure that by 2008 replacement tires sold in California are, on average, as fuel efficient as the original tires of new vehicles sold in the state.[33] Without sacrificing safety, this law is projected to reduce California gasoline consumption by cars and light trucks by 3% by 2015,[34] saving in that year alone over 545 million gallons of gasoline, over $1 billion in fuel costs, and 4.8 million tons of CO_2.[35]

[1] Legislative Analyst's Office, *Cal Facts 2004: California's Economy and Budget in Perspective*, December 2004, p. 7. Available online at www.lao.ca.gov/2004/cal_facts/cal_facts_2004.pdf.
[2] When taking into account the emission from electricity imported into the state, the transportation sector accounts for 48% of California's CO2 emissions, and the natural gas and electricity sectors account for 46%. Calculated from data in: California Energy Commission, *Inventory of California Greenhouse Gas Emissions and Sinks: 1990-1999*, Publication #600-02-001F, November 2002.
[3] Oak Ridge National Laboratory; data compiled from: Blasing, T.J., C.T. Broniak, and G. Marland, "Estimates of Annual Fossil-Fuel CO2 Emitted for Each State in the U.S.A. and the District of Columbia for Each Year from 1960 through 2001," 2004 In Trends: A Compendium of Data on Global Change, Carbon Dioxide Information Analysis Center, Oak Ridge National Laboratory, U.S. Department of Energy. Available online at cdiac.esd.ornl.gov/trends/emis_mon/stateemis/emis_state.htm.
[4] Oak Ridge National Laboratory; data compiled from: Blasing, T.J., C.T. Broniak, and G. Marland, "Estimates of Annual Fossil-Fuel CO2 Emitted for Each State in the U.S.A. and the District of Columbia for Each Year from 1960 through 2001," 2004. In Trends: A Compendium of Data on Global Change, Carbon Dioxide Information Analysis Center, Oak Ridge National Laboratory, U.S. Department of Energy. Available online at cdiac.esd.ornl.gov/trends/emis_mon/stateemis/emis_state.htm.
[5] California Environmental Protection Agency Press Release, "West Coast States Strengthen Joint Climate Protection Strategy," November 18, 2004. Available online at www.ef.org/westcoastclimate.
[6] California Consumer Power and Conservation Financing Authority (CPA), California Energy Resources Conservation and Development Commission (CEC), and California Public Utilities Commission (CPUC), *Energy Action Plan*, Adopted May 8, 2003 by CPUC; April 30, 2003 by CEC; and April 18, 2003 by CPA. Available online at www.energy.ca.gov/energy_action_plan/2003-05-08_ACTION_PLAN.PDF. Letter from Governor Schwarzenegger to CPUC President Peevey, April 28, 2004.
[7] Executive Order S-20-04, December 14, 2004.
[8] Xenergy Inc., "California's Secret Energy Surplus: The Potential for Energy Efficiency," September 23, 2002, p. A-1.
[9] Commissioner Art Rosenfeld, California Energy Commission, July 2004.
[10] California Energy Commission, "Integrated Energy Policy Report Subsidiary Volume: Public Interest Energy Strategies Report," Publication # 100-03-012F, December 2003, p. 39.
[11] D. Bachrach, M. Ardeman, and A. Leupp, *Energy Efficiency Leadership in California: Preventing the Next Crisis.* April 2003, p. 2.
[12] The cost over the lifetime of energy efficiency initiatives undertaken during 2001 will be an average of 3¢/kWh (Global Energy Partners, *California Summary Study of 2001*, for the California Measurement Advisory Council (CALMAC), Report ID# 02-1099, March 2003.) The average cost of saved energy of PGC funded efficiency from 1990-1998 was about 2.5¢/kWh (Sheryl Carter, *Investments in the Public Interest: California's Public Benefit Programs under Assembly Bill 1890*, Natural Resources Defense Council, January 2000).
[13] 1994-1997 IOU energy efficiency programs yielded $1.4 billion in net benefits (California Public Utilities Commission, Decision 03-10-057, "Interim Opinion on Whether to Reopen the Shared-Shavings Incentive Mechanism Adopted in Decision 94-10-059 for Energy Efficiency Programs," Finding of Fact 9, October 16, 2003, p. 36). 1998-2003 electricity efficiency programs yielded $1.95 billion in net benefits (Pacific Gas and Electric Company, Southern California Edison, and San Diego Gas & Electric, *Energy Efficiency Annual Report*s, May 1998-2004).
[14] California Public Utilities Code Section 739.10 states: "The commission shall ensure that errors in estimates of demand elasticity or sales do not result in material over or undercollections of the electrical corporations."
[15] Mike Messenger, California Energy Commission Staff, April 2003.
[16] Title 24 building standards will save 180 MW/year (California Energy Commission, "Energy Commission Approves New Building Standards to Help the State Cut Energy Use," Press Release, November 5, 2003), and Title 20 appliance standards will save 100 MW/year (California Energy Commission, "Energy Commission Approves New Energy-Saving Rules for Appliances," Press Release, December 15, 2004).
[17] Title 24 is revised on a three-year cycle, and the next update will be in 2008. Title 20 is revised approximately every three years.
[18] California Public Utilities Commission, Decision 04-09-060, "Interim Opinion: Energy Savings Goals for Program Year 2006 and Beyond," September 23, 2004.

[19] Kushler, M., D. York, and P. Witee, "Five Years In: An Examination of the First Half-Decade of Public Benefits Energy Efficiency Policies," April 2004, p. vi.
[20] Calculated from targets in CPUC Decision 04-09-060, September 23, 2004 and demand forecasts in California Energy Commission, *Integrated Energy Policy Report*, Appendix A, December 2003.
[21] California Public Utilities Commission, Decision 05-01-055, "Interim Opinion on the Administrative Structure for Energy Efficiency: Threshold Issues," January 27, 2005.
[22] California Public Utilities Commission, Decision 05-04-052, "Interim Opinion Approving 2005 Low Income Energy Efficiency (LIEE) and California Alternative Rates for Energy (CARE) Programs for Pacific Gas and Electric Company, Southern California Edison Company, Southern California Gas Company, and San Diego Gas & Electric Company," April 21, 2005.
[23] Energy Information Administration, *Renewable Energy Trends 2003, with Preliminary Data for 2003,* July 2004, p. 5.
[24] Based on estimated amount of renewable energy needed to meet RPS (20% by 2010), California Energy Commission, *Public Interest Energy Strategies Report*, Publication 100-03-012F, December 2003, p. 96, Table 5-5.
[25] Energy Information Administration, *Electric Power Monthly: April 2005, with Data for January 2005*, Tables 1.6.A and 1.14.A, April 18, 2005. Available online at www.eia.doe.gov/cneaf/electricity/epm/epm.pdf.
[26] SB 1078 (2002).
[27] California Consumer Power and Conservation Financing Authority (CPA), California Energy Resources Conservation and Development Commission (CEC), and California Public Utilities Commission (CPUC), *Energy Action Plan*, Adopted May 8, 2003 by CPUC; April 30, 2003 by CEC; and April 18, 2003 by CPA, p. 5. Available online at www.energy.ca.gov/energy_action_plan/2003-05-08_ACTION_PLAN.PDF.
[28] California Energy Commission, *Integrated Energy Policy Report: 2004 Update*, November 2004, p. 37.
[29] California Public Utilities Commission, Decision 04-12-048, "Opinion Adopting Pacific Gas and Electric Company, Southern California Edison Company and San Diego Gas & Electric Company's Long-Term Procurement Plans," December 16, 2004, Findings of Fact 76-78.
[30] California Public Utilities Commission, Decision 05-04-024, "Interim Opinion on E3 Avoided Cost Methodology," April 7, 2005, Conclusion of Law 7.
[31] AB 1493 (Pavley, 2002) directed CARB to establish motor vehicle standards to limit GHG emissions from passenger cars and light trucks. CARB unanimously approved their standards in September 2004.
[32] As compared to business as usual. California Environmental Protection Agency Air Resources Board, "Staff Report: Initial Statement of Reasons for Proposed Rulemaking, Public Hearing to Consider Adoption of Regulations to Control Greenhouse Gas Emissions from Motor Vehicles," August 6, 2004, p. 39.
[33] AB 844 (Nation, 2003).
[34] With the program starting in 2008, it is assumed that by 2015 all light-duty replacement tires will be fuel-efficient tires. The fuel-efficient replacement tires increase the fuel economy of vehicles using them by 4%. This translates into a 3% decrease in fuel consumption from all light-duty vehicles, since about 75% of light-duty vehicles use replacement tires. The range of fuel economy benefits from fuel-efficient replacement tires is provided in a consultant report to the California Energy Commission: "California State Fuel-Efficient Tire Report: Volume II," Consultant Report 600-03-001CR Vol. II, January 2003.
[35] Calculated using a gasoline price of $2/gal and a 2015 gasoline demand of 18,200 million gallons from California Energy Commission, *Integrated Energy Policy Report Subsidiary Volume: Transportation Fuels, Technologies, and Infrastructure Assessment Report*, Commission Report 100-03-013F, December 2003. Fuel cost savings are gross savings.